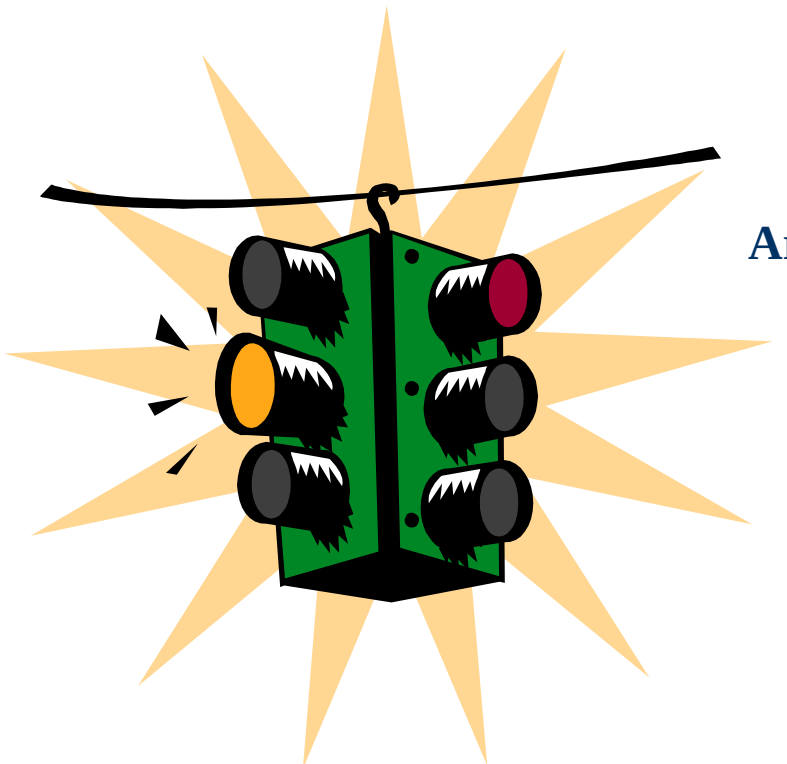
City of Walnut Creek

Traffic Signal System Upgrade



Presented to:

Arterial Operations Committee

Presented by:

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Associate Traffic Engineer

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Existing System

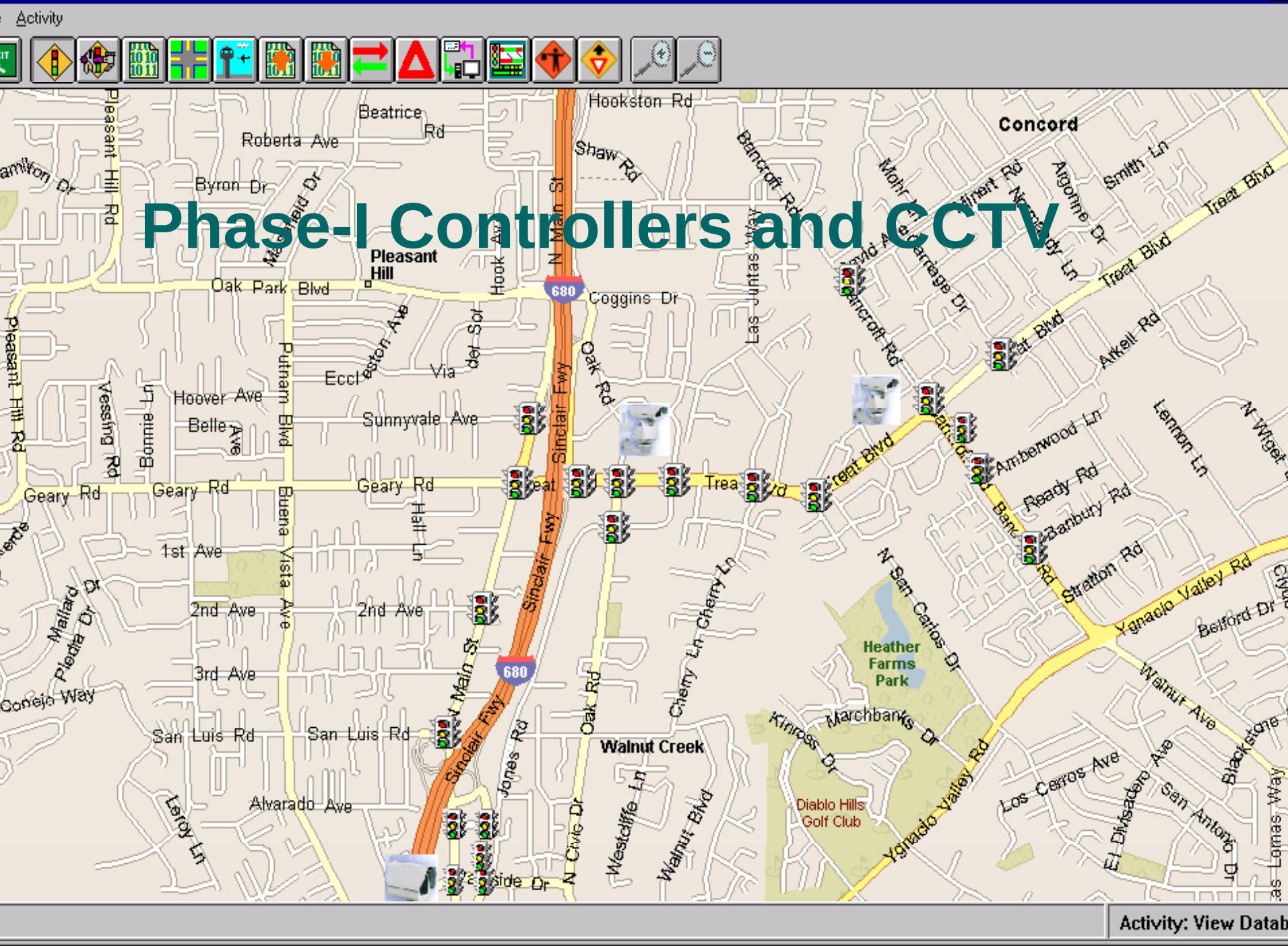
- Multisonics VMS-330 Central Master
- TS1 Type P, M, G, and 332 Cabinets
- Multisoncs 820A Controllers
- Type 170 Controllers
- Twisted Copper Signal Interconnect

New System

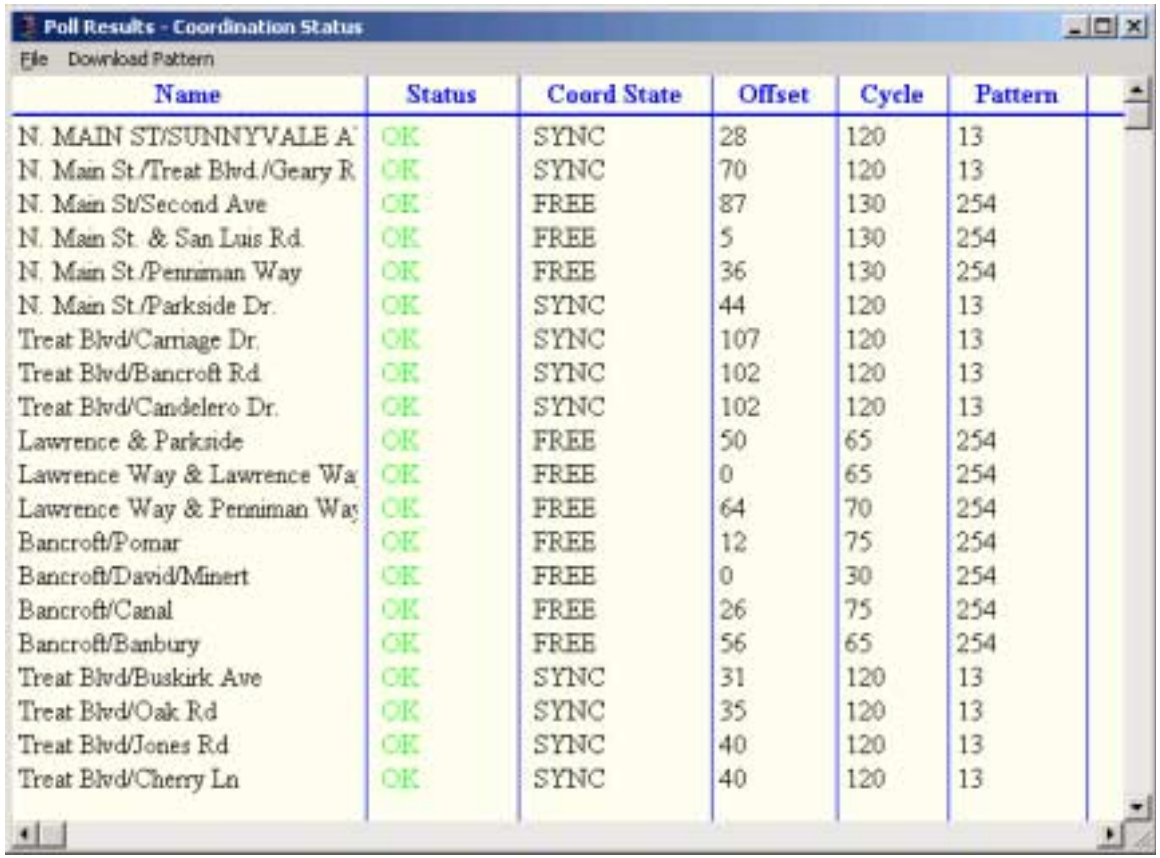
- Naztec StreetWise Central Server
- Type 2070 Controllers
- TS1 Type P, M, and 332 Cabinets
- Existing/New SIC and Conduits
- CCTV System

Traffic Signal System Upgrade Phase-I

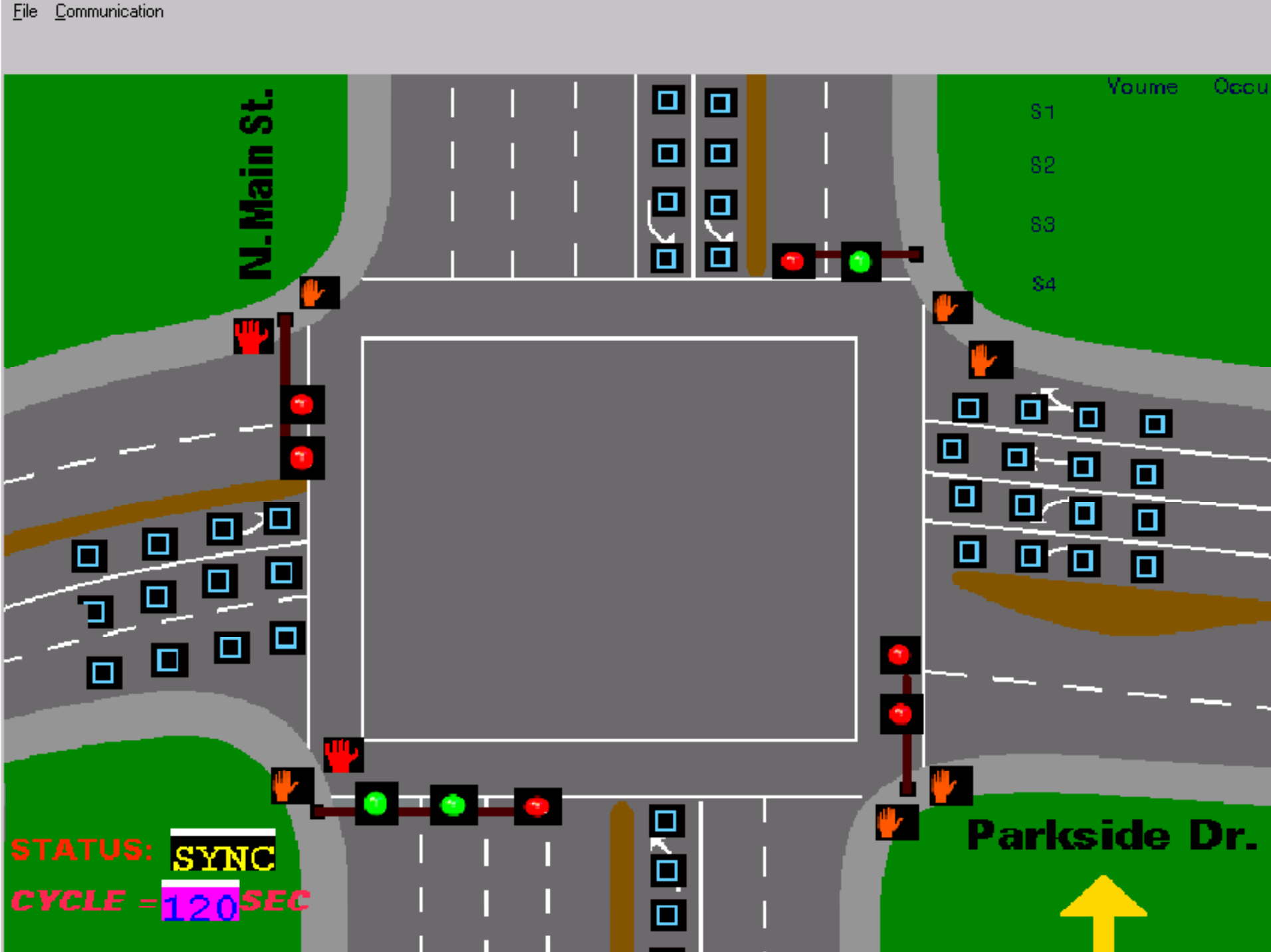
- Installed StreetWise server
- Completed communication network
- Developed new signal timing plans
- Deployed Naztec Type 2070 controllers
- Installed CCTV system


Activity
Phase-I Controllers and CCTV
Pleasant Hill
Concord
Walnut Creek
Oak Park Blvd
Geary Rd
Coggins Dr
Hookston Rd
Beatrice Rd
Roberta Ave
Byron Dr
Shaw Rd
Treat Blvd
Arkell Rd
Ready Rd
Banbury Rd
Stratton Rd
Ygnacio Valley Rd
Walnut Ave
Los Cerros Ave
San Antonio Dr
Blackstone
Hoover Ave
Belle Ave
Sunnyvale Ave
1st Ave
2nd Ave
3rd Ave
San Luis Rd
Alvarado Ave
Heather Farms Park
Diablo Hills Golf Club
Marchbanks Dr
Kinross Dr
N San Carlos Dr
Cherry Ln
Westcliffe Ln
Walnut Blvd
Jones Rd
Hall Ln
Putnam Blvd
Buena Vista Ave
Pleasant Hill Rd
Oak Rd
Hook Ave
Las Juntas Way
Bancroft Rd
Amberwood Ln
Lennon Ln
Belford Dr
Smith Ln
Argonne Dr
Sinclair Fwy
N Main St
680
Activity: View Datab

Coordination Status Screen



Name	Status	Coord State	Offset	Cycle	Pattern
N. MAIN ST/SUNNYVALE A	OK	SYNC	28	120	13
N. Main St /Treat Blvd /Geary R	OK	SYNC	70	120	13
N. Main St/Second Ave	OK	FREE	87	130	254
N. Main St. & San Luis Rd.	OK	FREE	5	130	254
N. Main St /Penniman Way	OK	FREE	36	130	254
N. Main St /Parkside Dr.	OK	SYNC	44	120	13
Treat Blvd/Carriage Dr.	OK	SYNC	107	120	13
Treat Blvd/Bancroft Rd	OK	SYNC	102	120	13
Treat Blvd/Candelero Dr.	OK	SYNC	102	120	13
Lawrence & Parkside	OK	FREE	50	65	254
Lawrence Way & Lawrence Wa	OK	FREE	0	65	254
Lawrence Way & Penniman Wa	OK	FREE	64	70	254
Bancroft/Pomar	OK	FREE	12	75	254
Bancroft/David/Minert	OK	FREE	0	30	254
Bancroft/Canal	OK	FREE	26	75	254
Bancroft/Banbury	OK	FREE	56	65	254
Treat Blvd/Buskirk Ave	OK	SYNC	31	120	13
Treat Blvd/Oak Rd	OK	SYNC	35	120	13
Treat Blvd/Jones Rd	OK	SYNC	40	120	13
Treat Blvd/Cherry Ln	OK	SYNC	40	120	13

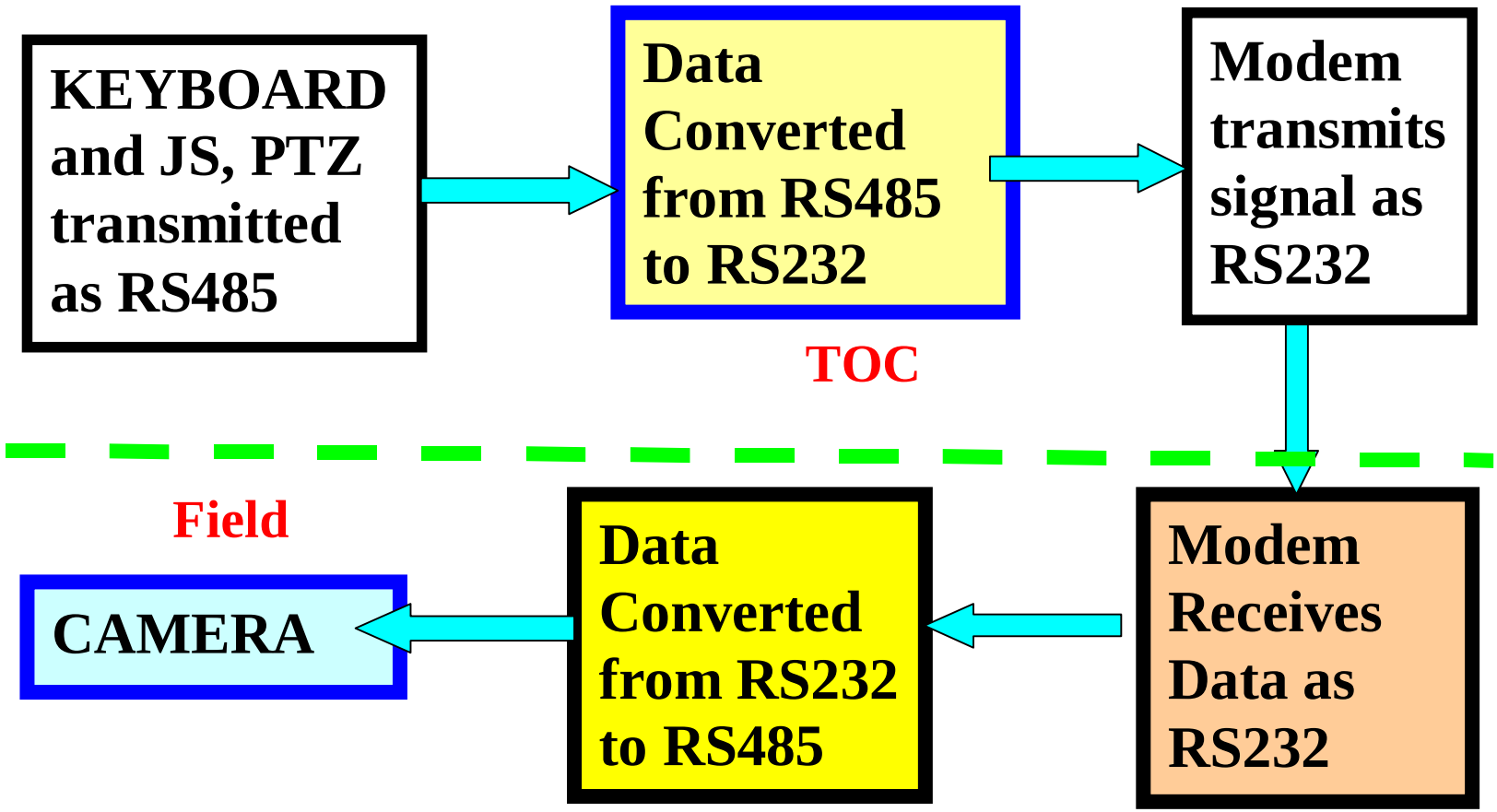

File Communication
N. Main St.
Voume Occu
S1
S2
S3
S4
STATUS: SYNC
CYCLE = 120 SEC
Parkside Dr.

CCTV System for Ygnacio Valley Road (Phase-II)

- Each camera has a single twisted pair in the existing SIC for sending video to TOC
- A common twisted pair is used for sending PTZ commands from TOC to all cameras
- Encountered data protocol conversion problems

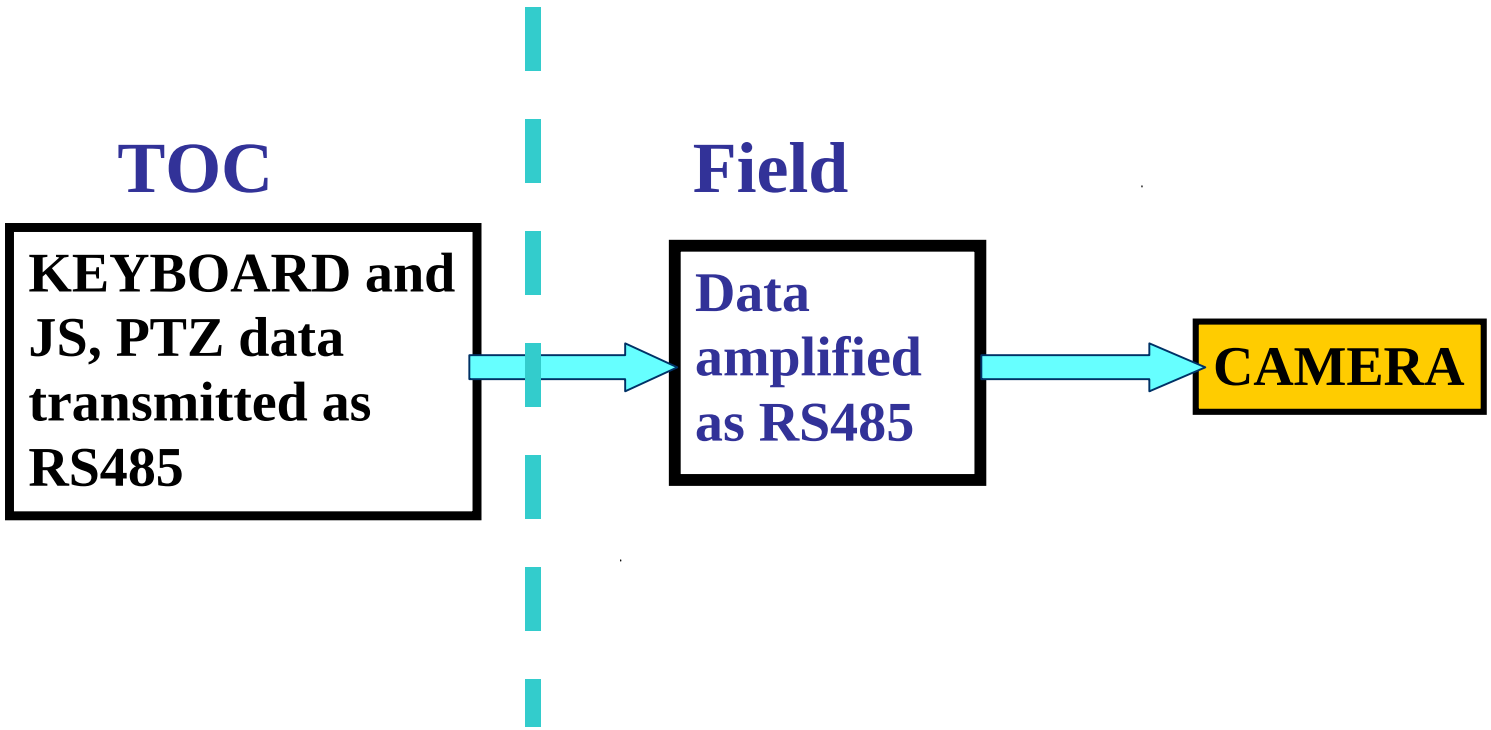
CCTV System

Initial Configuration



CCTV System

Final Configuration



Civic/YVR Camera

Civic/YVR Camera

Oakland/YVR Camera

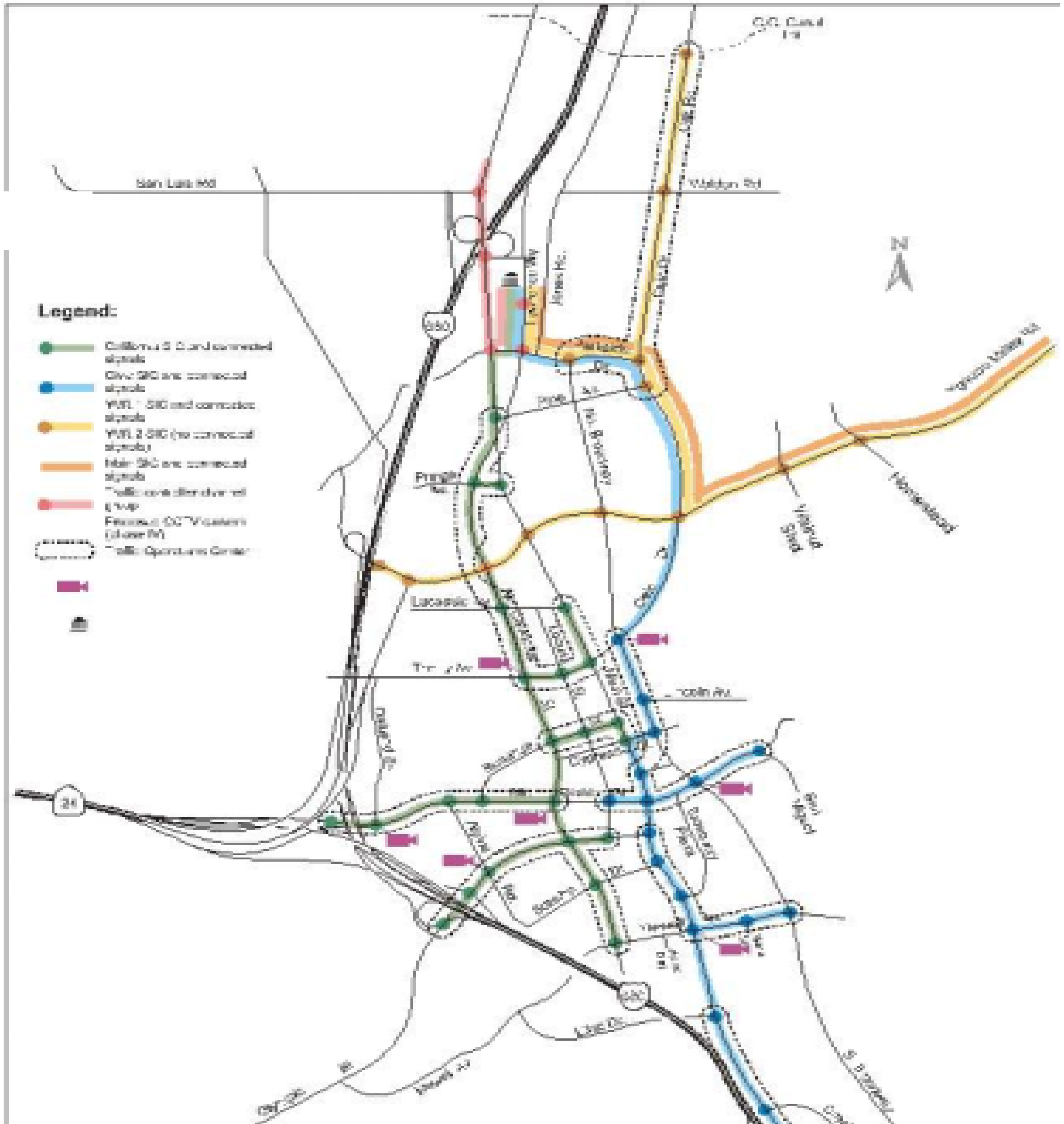
Controller Cabinet Conversions

- Built a new foundation
- Removed G cabinets
- Installed M cabinets

Signal System Upgrade
Final Phase

- Install new SIC in existing empty conduit
- Replace existing SIC as needed
- Replace conflict monitors
- Replace controllers, convert databases, and implement new timing plans
- Install CCTV assemblies

Final Phase
SIC and Cameras



Steps in Project Deployment

- Weekly meetings
- City staff, vendor, contractor, consultant
- Testing
- Reporting problems promptly
- Maintaining an open dialogue

Problems Encountered

- Controller's firmware upgrade in field was taking up to 30 minutes
- Max-out of the leading left turn phase when Lead/Lag phasing was used
- Detector failure not reported by phase and type

Problems Encountered Continued

- Consistent FLASH problem with one intersection
- Occasional server crashes
- Missing volume and occupancy reports for detectors 17-64.

Lessons Learned

- Teamwork
- Testing and validation
- Open dialogue with vendor

Lessons Learned

- Validation is difficult when working with new technologies.
- The need for a complete and well-defined set of systems requirements
- Motivation and team work is the key to success

Advantages of the System

- State-of-the-art architecture
- Maintain signal coordination without central command
- More timing plans, more detectors, and many other flexibilities with timing parameters
- Potential for system integration such as center to center communication and regional traffic management
- Users group in the area